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FARM DAIRY HOUSES



A GOOD MILK HOUSE of suitable design and construction is important in the proper equipment of a dairy farm because it makes for convenience and saves time in the handling of milk and because it is a necessity in meeting sanitary requirements. Clean milk can be produced more easily and more satisfactorily with proper equipment than with poor equipment.

Milk inspectors recommend the use of properly designed and constructed milk houses, and provisions on this point are usually included in milk ordinances and regulations. Score cards for dairy farms also give credit for properly built milk houses.

Plans and construction must be of the right kind if the milk house itself is to be suitable. The various plans presented in this bulletin are designed to meet the requirements for satisfactory milk houses.

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FARM DAIRY HOUSES

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NECESSITY FOR A DAIRY HOUSE

THE NATURE OF MILK requires that the milk room be separate from the stable. Milk absorbs odors and is easily contaminated by stable dirt. If so contaminated it may become unhealthful for the consumer and the contamination may cause losses to the producer through souring and the development of bad flavors. The milk should, therefore, be removed promptly after milking, to a clean, well-ventilated place free from dust, insects, and odors.

IMPORTANCE OF A WELL-CHOSEN LOCATION

The best results will be obtained if the milk room does not open directly into the stable. Stable air and stable dust should have no chance to enter the room where milk is exposed and prepared for market.

On the other hand, if the milk room is far removed from the stable it will take much additional labor to carry the milk from each cow directly to the milk house, and prompt removal is desirable, to prevent the milk from being subjected to stable odors and dust and so that it will be cooled promptly.

Building the milk house adjacent to the stable is not objectionable if the surroundings are suitable. In this case there should be an outside entrance or a well-ventilated passageway between the stable and the milk house. The milk house should be located on a well-drained spot. No accumulations of manure, refuse, or other objectionable material should be allowed near the milk house, because they give rise to undesirable odors and attract flies.

CONSTRUCTION OF DAIRY HOUSES

BUILDING MATERIALS

A concrete, brick, stone, cement-block, or tile house, with an asbestos-shingle or slate roof, is fireproof and durable, and easy to keep in sanitary condition. Although the initial cost may be high,

such a house is believed to be cheapest over a long period of years, for it requires few repairs and little painting. Wood or a combination of wood and the above-mentioned materials may be used. The roof may be covered with slate, asbestos shingles, tile, prepared roofing, wooden shingles, or metal. Any of these materials may be used in the following plans if due allowance is made for the different thicknesses of walls when different materials are used. Outside walls should be of approximately the following thicknesses: Concrete, 6 to 8 inches; brick, 9 inches; tile, 8 inches; stone, 14 to 18 inches; cement block, 8 inches; and frame, 6 inches.

FLOORS

Concrete is by far the best material for milk-house floors, as it resists moisture, decay, and wear. Concrete floors should be built on a base about 5 inches thick, made up of 1 part cement, 3 parts sharp, clean sand, and 5 parts crushed stone or gravel covered with a top coat 1 inch thick made by mixing 1 part cement and 2 parts sand. The top coat should be troweled hard and smooth. The whole floor should be pitched at least one-fourth inch to the foot toward one or more large bell traps, so that it will drain thoroughly. Tile makes a very satisfactory floor. It is smooth, easily cleaned, and withstands the handling of cans, but is more expensive than concrete and the joints have to be retarred every three to five years.

WALLS

Cement plaster (1 part cement to 3 parts sand) makes the best inside finish. It can be applied directly to walls composed of stone, tile, concrete, brick, or cement blocks. In a frame house it is necessary to plaster on expanded metal lath. Dressed tongue-and-groove lumber may be used for inside finish, but its life is not so long as that of other materials. Interior walls should be kept thoroughly covered with a good white enamel paint.

Door knobs should be preferably of porcelain or china. Other hardware should be of high grade so that moisture will affect it as little as possible.

WINDOWS

All milk houses should have plenty of sunlight, well distributed. Window-glass surface equivalent to at least 10 per cent of the floor area is recommended. Counterbalanced or sliding sash should be used so that screens may be placed outside without interfering with the operation of the windows.

VENTILATION

Steam and water are apt to make the dairy house damp, hastening deterioration and favoring the growth of mold and bacteria. Odors are also likely to arise from spilled milk. Proper ventilation is necessary to keep the air dry and sweet. In some climates ventilation can be obtained by such openings as doors and windows, but in most localities some other means are necessary. Sometimes a ventilating flue is desirable. It should run from the ceiling through the peak of the roof, the outer opening being shielded to keep out rain

and snow. In large milk houses, forced ventilation with an electric fan may be necessary in order to keep the ceiling free from moisture.

All openings such as doors, windows, and ventilators should be thoroughly screened to keep out flies and other insects.

FACILITIES FOR CLEANING AND TREATING¹ UTENSILS

Milk houses should be supplied with an abundance of cold, pure water for cooling milk and washing utensils and with adequate facilities for supplying hot water and steam. Directions for constructing cooling tanks and for cooling milk and cream are given in Farmers' Bulletin 976.

DRAINAGE

Every milk house should have a proper means of waste disposal. More or less milk is spilled on the floors or washed from utensils. Milky water swept out of the door attracts flies and gives rise to disagreeable odors. The floor should be drained through bell traps into a 6-inch glazed tile drain. Four-inch tile is sometimes used, but is apt to become clogged. The drain should be laid 2 feet deep, with a fall of at least 1 foot to every 60 feet in length. A rapid fall tends to prevent clogging. Drainage should be carried at least 50 feet from the milk house and away from the water supply. Persons contemplating the construction of dairy houses, and especially waste-disposal systems, should apply to their local and State health departments for copies of regulations on sanitary requirements. These requirements differ in different States.

PLANS FOR MILK HOUSES

The accompanying illustrations (figs. 1 to 9) give general plans of dairy houses for handling the milk from herds of different sizes, and in different ways.

Complete blue prints and bills of material required for the construction of any dairy house shown may be obtained from the Bureau of Agricultural Engineering, United States Department of Agriculture, Washington, D. C. In asking for plans for any of these buildings, please refer to the design number, not the figure number.

For information on plans to fit particular conditions, and other information regarding milk houses, apply to the Bureau of Dairy Industry, United States Department of Agriculture.

¹The expression "treating to kill bacteria" is used instead of "sterilizing," because "sterilize" means actually killing all bacteria, whereas the usual process used with dairy utensils kills only the greater part of the bacterial life.

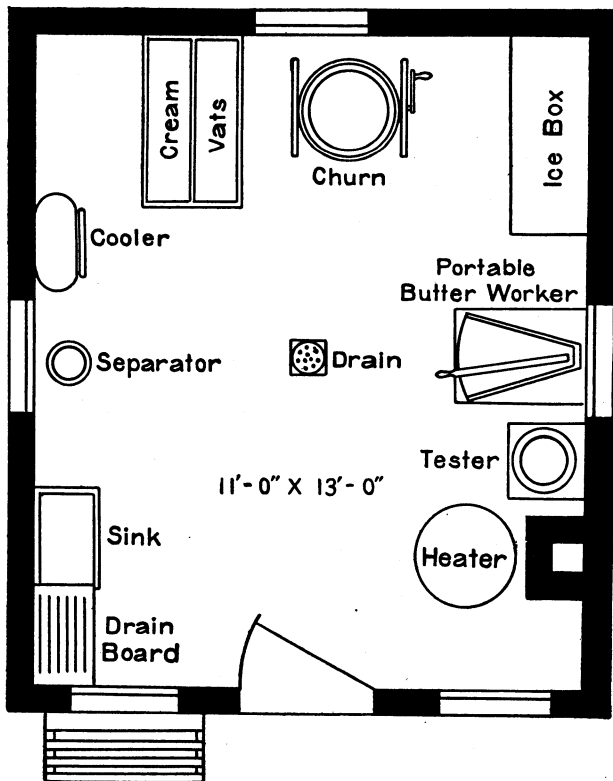
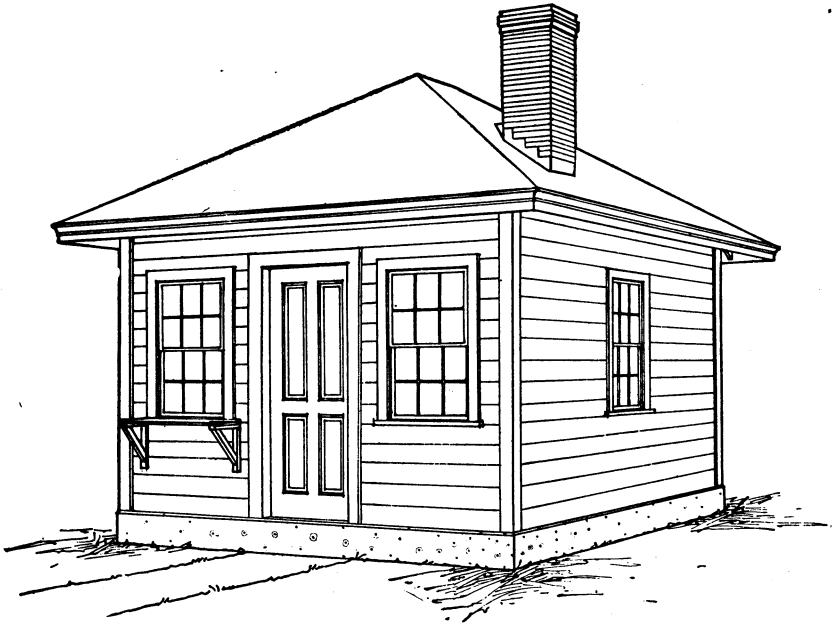


FIGURE 1.—A plan suitable for a farm with a herd of from 25 to 30 cows, and arranged for hand-power butter-making equipment. The building has one room which contains all necessary butter-making apparatus, also a hot-water heater, wash sink, and drying rack for the care of pails, strainers, separator parts, etc. Design No. 1341

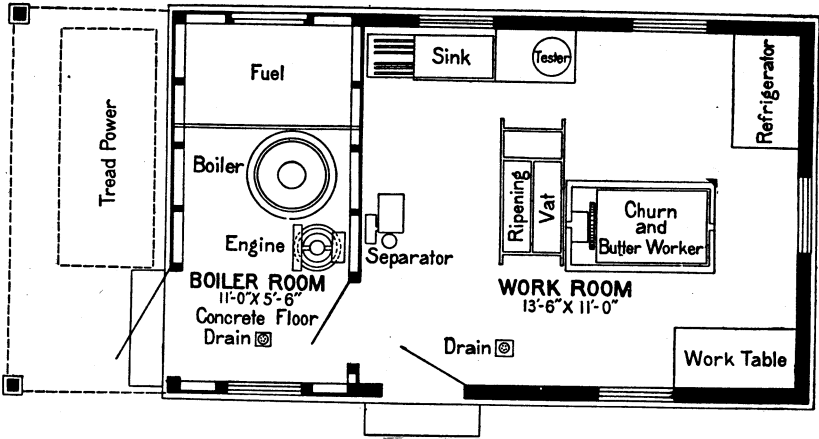
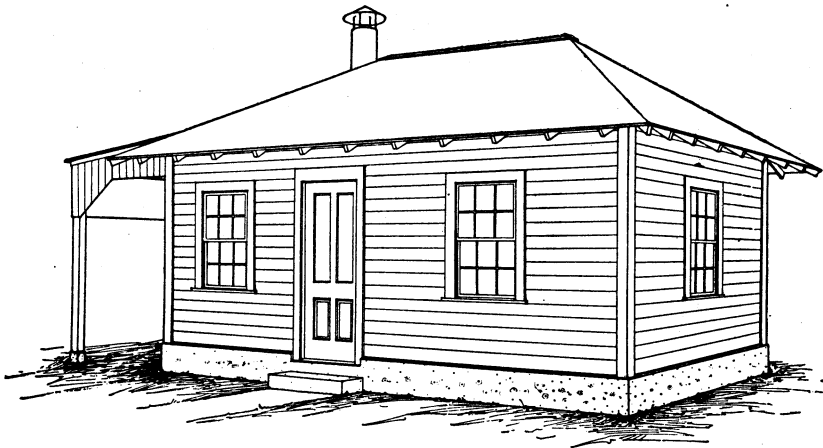


FIGURE 2.—For buttermaking on farms where equipment is operated by power. The plan shows a boiler and steam engine; but power can be supplied by a gas engine or tread power, and the dotted lines indicate a shed addition that can be added if a tread power is used. Where a steam engine is not installed, a small boiler will be required to furnish the necessary steam for heating water and cleansing utensils and apparatus. Design No. 1337

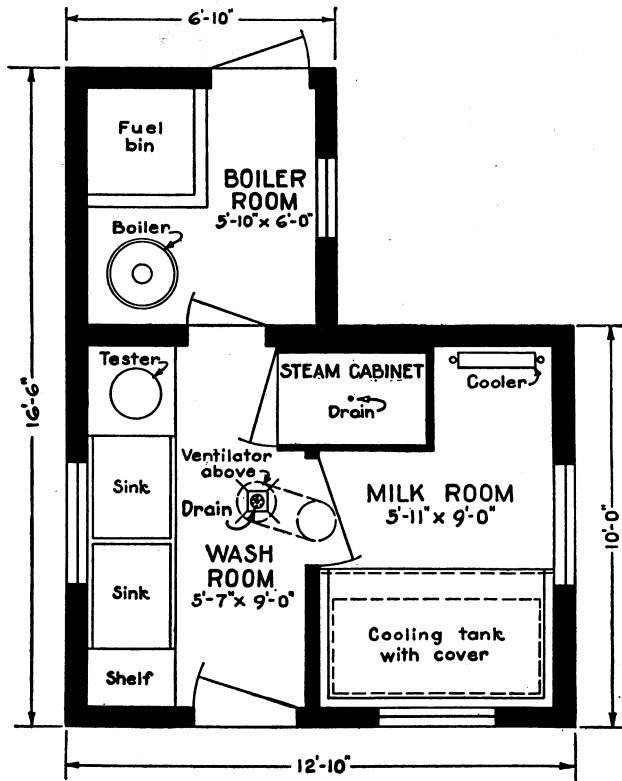
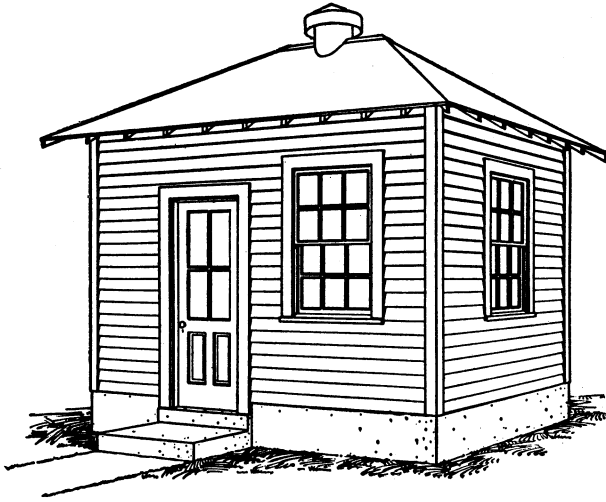


FIGURE 3.—A milk house suitable for small dairies of 10 to 20 cows where milk is shipped in cans. This little house consists of two rooms and a shed addition to house the boiler. The floor area of the milk house proper is 9 by 12 feet. Design No. 909

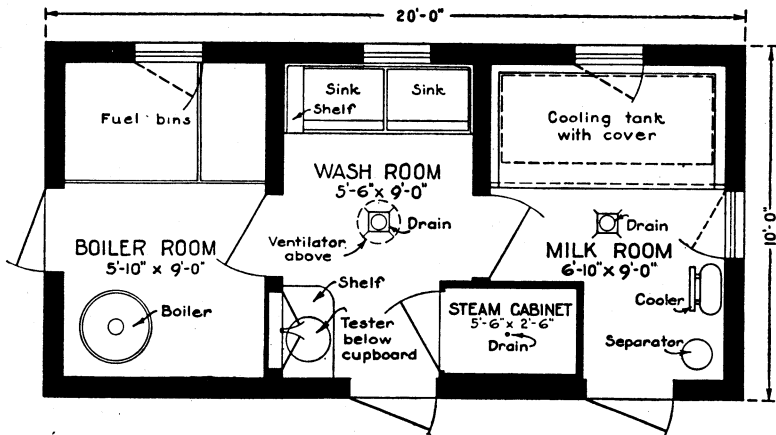
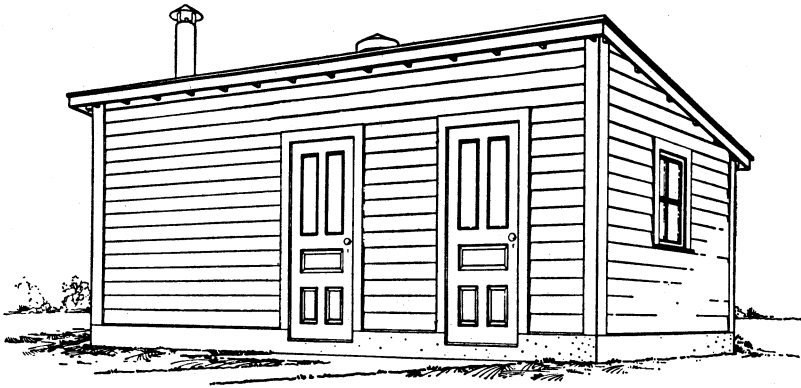


FIGURE 4.—Perhaps the best all-around milk house for 20 to 30 cow dairies shipping milk or cream in cans. It is small, conveniently arranged, and relatively inexpensive. The little closet between the milk and wash rooms is to hold sample bottles and glassware for the Babcock test. The cooling tank is sunk below the floor level, to minimize the lifting of cans of milk. Design No. 1336

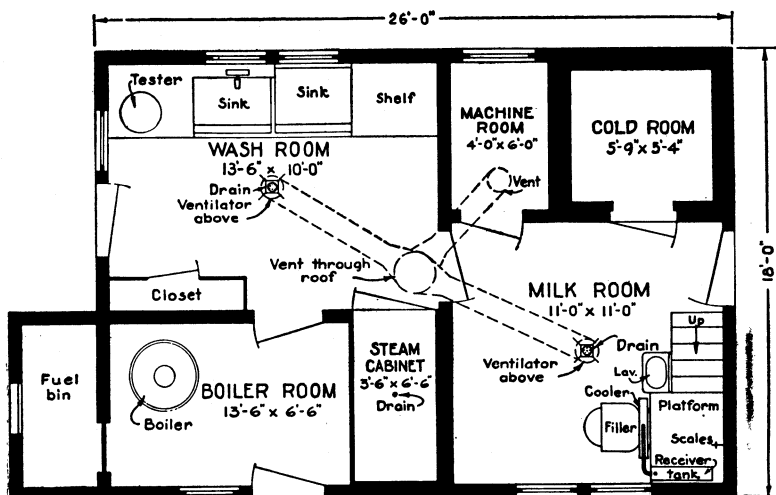
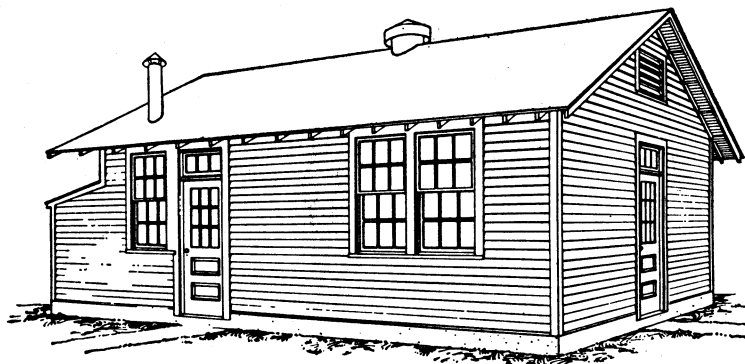


FIGURE 5.—An arrangement for a 30 to 60 cow dairy where the milk is bottled. The building is 18 by 26 feet and contains three rooms besides a cold-storage room and machine room. Perspective view shows rear and right side of plan. Design No. 633

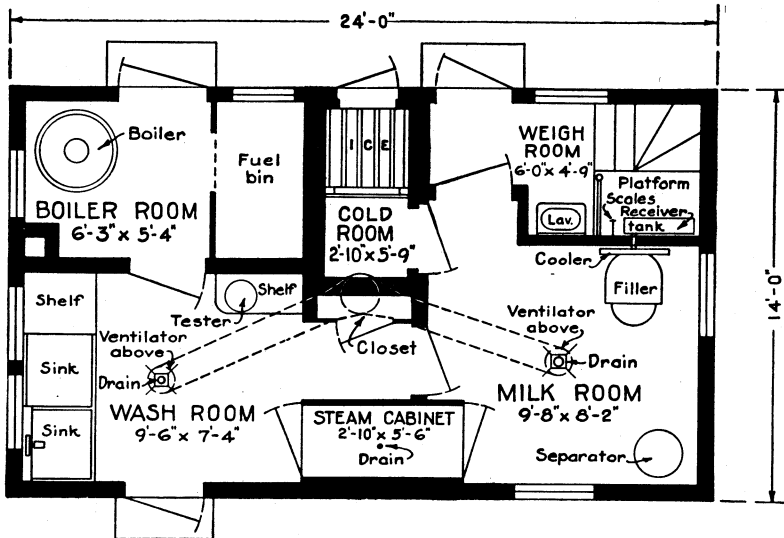
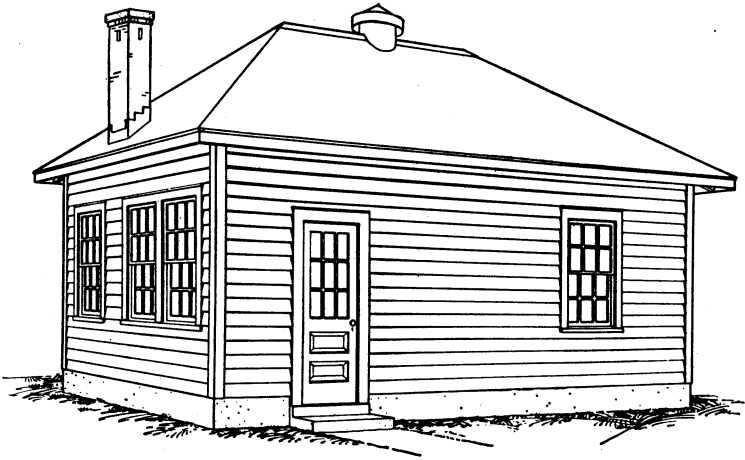


FIGURE 6.—A building which, though only 14 by 24 feet, is fully equipped for handling a bottled-milk business with from 20 to 40 cows. There is full provision for separating and bottling. Facilities are provided for washing all utensils, including bottles, and treating them in a steam cabinet. Milk is brought direct from the barn and poured into an elevated hopper, from which it runs over the cooler. Design No. 1333

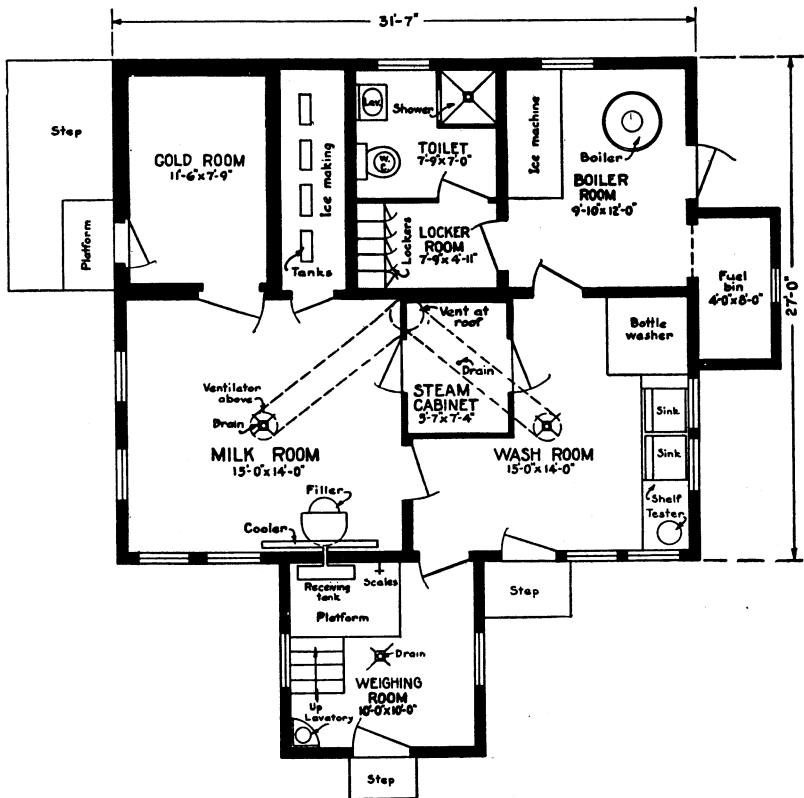
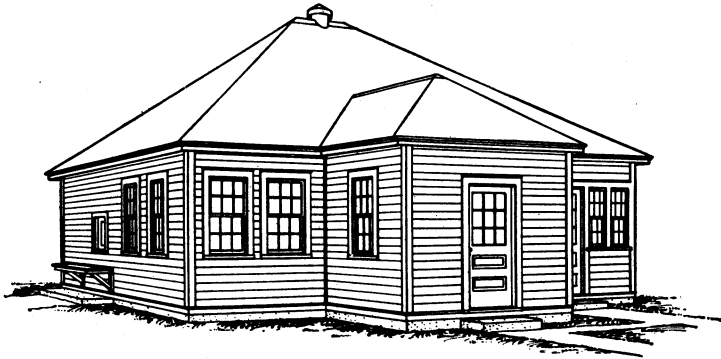


FIGURE 7.—A plan designed for farms producing certified milk or a special grade of milk from 40 to 100 cows. Besides the usual facilities for bottling milk and cleansing utensils, it contains a dressing room and shower for the milkers, and a lavatory in the weigh room where a milker can wash his hands after milking each cow. Design No. 1339

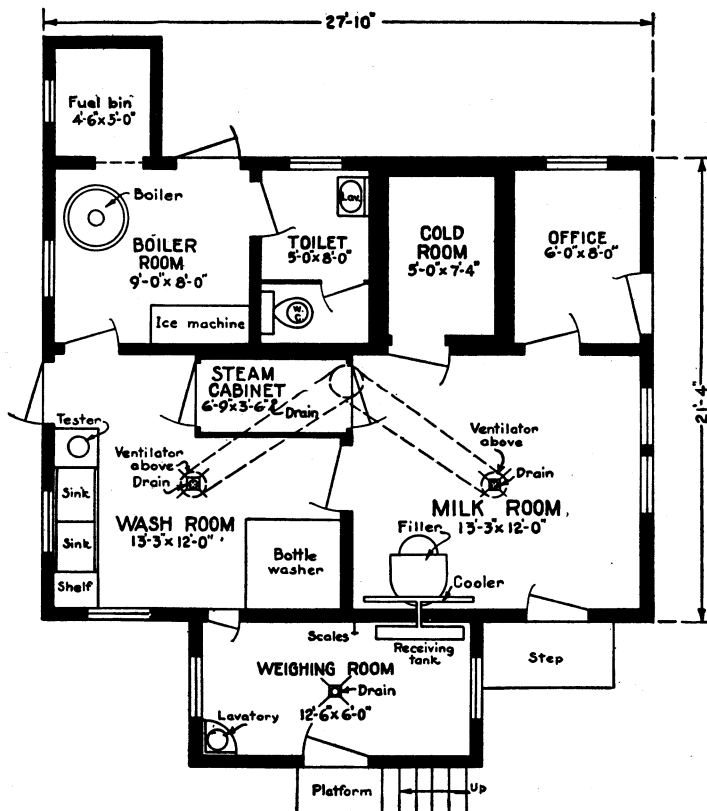
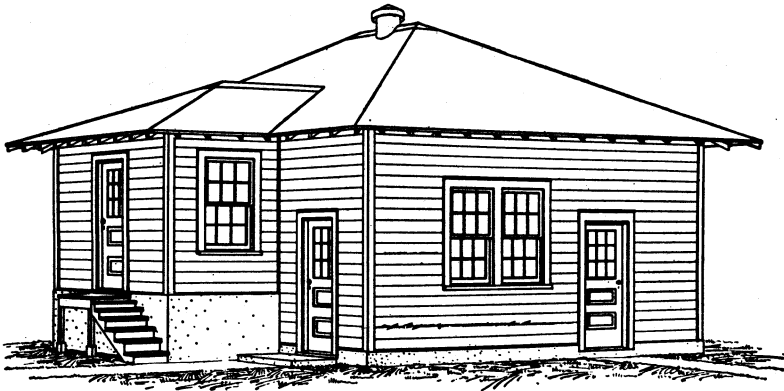


FIGURE 8.—Sometimes a milk producer is in town, where he bottles and retails milk from his dairy. Sometimes he buys milk from one or two other dairymen. Usually some milk is sold on the premises, and it is customary to make two deliveries daily. The building shown in this plan is suitable for such conditions. It provides an office and salesroom, besides the other necessary rooms. Design No. 1342

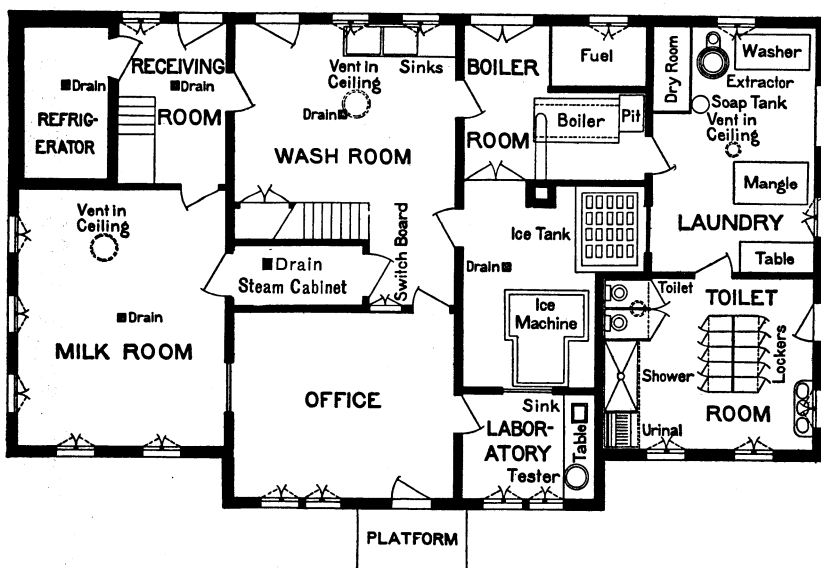


FIGURE 9.—A plan suitable for large dairies of several hundred cows, where milk of high quality is produced. It is adapted to large certified dairies, hospitals, educational institutions, and similar establishments. Artificial refrigeration is provided, together with tanks for making ice. The building contains a laboratory and a laundry for washing suits worn by the milkers and milk-house employees. Design No. 1345

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